CINT Grad Student Presentations & Tours

In-Situ Probing of Epitaxially Aligned GaN Nanowires through Nanomanipulation
Tania Henry

Self alignment and positioning of nanowires in-situ is the first step towards overcoming the challenge of random positioning and orientation of nanowires for nanowire device fabrication and integration. Successful integration however, comes with grasping the fundamental mechanisms governing transport, and a thorough understanding of device functionality. As the popularity of nanoscale devices increases, the need for suitable characterization and manipulation tools becomes important. The electrical properties of single epitaxially aligned gallium nitride (GaN) nanowiress were investigated using nanomanipulation in a SEM/STM tool. Nanomanipulation allows easy access to individual nanowiress without the need for optical or e-beam fabricated contacts. This approach permits the extraction of the intrinsic properties of the nanowiress and gives insight into the electrical conduction mechanisms taking place.

A combination of non-linear current-voltage (I-V) characteristics along with Schottky diodes were realized using this approach. This allows us to extract nanowire properties such as the resistivity and Schottky barrier height.

In-Situ Deformation of Nanostructures
Junhang Luo

In recent years, nanostructures such as nanowires (NWs) and nanotubes have received increased attention as building blocks for future nanoscale devices. Owing to their small length scale and high surface area/volume ratio, nanostructures exhibit unique mechanical properties as compared with bulk materials. But most results are come from the molecular dynamics (MD) simulations and few experimental studies were carried out due to the difficulties of sample preparation. There still exists a large gap between the structure and the properties of nanoscale materials. We intent to bridge the gap by conducting the simultaneous structure and property studies of individual nanostructures.